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also as the character of each individual. It has been justly observed that if the character (individuality) of a person were entirely known, we would be able to predict the thoughts and deeds of such an individual, however complicated they might be."

On p. 170 it is pertinently remarked, that "there is no gap between conscious and reflex movements to be filled in by instinct."

Dr. Meynert makes the following reference to the nature and value of our cognitions (p. 183): "I wish to add that it is the boldest hypothesis, shared alike by the ordinary mind and by scientific realism, to assume that the world is such as it appears to the brain to be; that the latter can be likened to a mirror which simply reflects the forms of the outer world; that the world as it appears to the brain exists independently of the presence or absence of mind. Indeed, it seems to me to be a crucial test of an individual's power of thought to determine whether he can conceive or not of the unreality of the world clad in forms which our minds have bestowed upon it. It should be reiterated that the idealistic conception of the world is supported by physiological facts, and still more positively by the facts of cerebral architecture before alluded to." We cannot learn from this paragraph whether Dr. Meynert is an idealist in the Berkeleyan sense or not. In any case the pathological argument has a double edge. Perceptional and ideational incapacity, based on pathological conditions, no more prove the unreality (*i. e.*, immensurability) of the *non ego*, than the perfection of our cognitions enables us to perceive all there is of the world. Because we do not apprehend all, it is not to be inferred that we therefore apprehend nothing.

Dr. Meynert promises to discuss the important question of hereditary predisposition to mental disease in the second part of the work. He outlines his position on this question in the preface to Vol. I in the following language: "It is taking altogether too simple a view of things to regard morality as one of man's talents and as a definite psychical property which is present in some persons and lacking in others."—*C.*

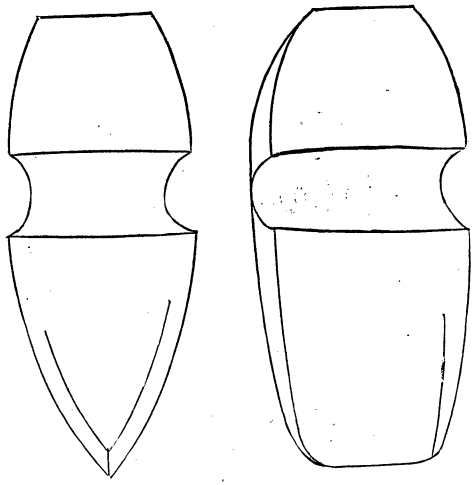
ANTHROPOLOGY.[1]

THE ABORIGINAL AX OF THE SALT RIVER VALLEY, ARIZONA.—The fertile alluvial lands of the great valley of Salt river, which have been lying idle for unknown centuries, are now being rapidly redeemed by irrigation and planting. Phœnix, the "Garden City" of Arizona, now numbers some 5000 inhabitants, and is rapidly growing in population and wealth upon the ground which was formerly densely occupied by a race presumably extinct, unless it finds representation in the Pimos and Maricopas of to-day.

[1] Edited by Prof. OTIS T. MASON, National Museum, Washington, D. C.

Amongst the relics of the past turned up by the modern plough the aboriginal stone ax is the most conspicuous and abundant. The numerous specimens show that but one general form and type prevailed, and that the material in all was nearly the same—a compact, firm, dark-green dolerite. Availing doubtless of the river-worn boulders nearest to the desired form, the ancients shaped them by rubbing or grinding into axes of superior form and finish, capable of doing good service in cutting and hewing the soft cottonwood trees of the lowlands and even the harder mezquite of the first terrace where their homes were built.

The form of the ax is best described by the accompanying figures, in side view and top view. The groove or channel for



the withe or thong of rawhide for the handle is generally deep and left somewhat rough in surface, while the rest of the ax is ground smooth and is polished. In some specimens, however, the groove is also smooth and polished as if by long wear. This groove extends across the top of the ax and down the two sides, but not across the bottom, or under edge, which is left straight and is ground smooth, apparently for the reception of a key or wedge to tighten the clasp of the thong on the stone. In many specimens particularly in the heavy hammers or sledges, also found here, the borders of the groove are raised in a ridge a quarter of an inch or more above the general surface, thus giving a broader and firmer bearing for the thong while the blade and head of the ax are made smaller and thinner.

The thickness of the axes varies considerably, as also the length, due in part to wear by long use and repeated grinding.

The weight seldom exceeds three pounds, and the length eight to ten inches.

One double-bitted ax, an unusual form, is seven inches long and one and a quarter inches thick. It is well shaped and appears to have been an effective tool. The cutting edges of all the axes were formed with great care and are curved as in our modern axes. They bear indisputable evidence of careful grinding into shape and to a cutting edge. This grinding was done with great accuracy and skill. The rectilinear parallelism of the lines of abrasion is surprising. Evidence of the use of stone axes is found in the remnants of the cedar floor beams in the walls of the ruins of Casa Grande.—*Wm. P. Blake, Phœnix, Arizona, March, 1886.*

THE SO-CALLED DEFORMED CRANIA.[1]—The discovery in Cuba of a series of crania commonly called deformed Carib skulls, is itself an argument against this identification, for it is well known that there never were either Caribs or practices of deformation in Cuba. M. le Docteur Montané read before this society, at a former meeting, an essay entitled, "A Cuban Carib," an epithet as opposed to the opinions of the author of the present paper as, for example, a Jamaican Aztec, a Venezuelan Quichua, a Portuguese Basque or a Magyar Englishman.

Let us establish who are the Caribs and under what circumstances were the crania found?

The Caribs, according to P. Casas and other chroniclers of America, were the inhabitants of Guadeloupe and Dominica, the first islands that opposed the Castilians. Christopher Columbus gave them the name, confounding them with the Chalybes of Asia, warlike people, neighbors to the Amazons, dwelt upon by the geographers and historians of antiquity.

These Caribs belonged to the same race as the other inhabitants of the archipelago, with no other difference except wearing the hair long and eating human flesh. This last accusation, unproved, extended later to other peoples of the continent belonging to different races. The word Carib became the synonym of anthropophagy, and there were Caribs throughout America, in Mexico, the Antilles, Brazil, &c. The first to bear this name disappeared a few years after, quicker than their relatives in other islands. War, slavery, and their own aggressive wars more promptly resulted in their extermination. In fact, half a century after the discovery of America, Guadeloupe, Dominica and adjacent islands were deserted. A new race of Indians established itself there and the land was occupied by France and other powers.

Thus the Indians called at the end of the seventeenth century Caribs by Breton, Du Tertre, Rochefort and Labat, and who,

[1] Read in Spanish before the Anthropological Society in Havana, Nov., 1885.

according to Rochefort, came from Florida (an incredible theory), and according to other authors from South America, were not the descendants of the first-named inhabitants of the archipelago. The authors named above depict their Caribs with racial characteristics quite different from those of the race anteriorly described by the first conquerors. Their language, according to Breton, had nothing in common with that familiar to Columbus and his companions. They were, moreover, much mixed with the negroes of Saint Vincent and Tabago, forming a race commonly called Carib negroes.

The opinions advanced in this study are related especially to the true and ancient Caribs of Columbus and the first chroniclers.

The plaster cast before us was taken from one of a number found, in 1847, in a cave near the eastern end of Cuba, by Miguel Rodriguez Ferrer, whose explorations, writings and official measures have contributed so much to scientific studies in our island. Two of these crania are now in Havana, where they were studied by the learned Poey; two others were sent to Madrid, where they were studied by MM. Graells, Vilanova and Peres Arcas; others remained in the possession of the discoverer. The original of this cast belonged to the University of Havana, and was destroyed by fire. Fortunately Sr. Nicolas Gutierez had preserved a perfect reproduction in plaster, which he presented to the Society of Anthropology.

The cranial measurements of Sr. Montané although useful, and indeed indispensable in other craniological studies, have no importance when we have to prove or disprove an historic fact as definite as the usage attributed to the Caribs and other American savages of voluntarily changing the form of the head. Craniological measures are useful in determining the characters of a large series or in deciding whether a given skull belongs to a class well known. But M. Montané does not possess the dimensions of a single series of crania called deformed Carib; what is more he has not the measures of one such. If such data existed they would be found in the best known texts, but we search for them in vain. Neither in public or private museums nor in atlases have we a single example of a deformed Carib skull. Only one has been described under this head in Morton's Crania Americana from a cast in Philadelphia, the original of which existed in Paris and had been used by Gall and Spurzheim in their phrenological studies.[1] But notice that this came from the Island of St. Vincent, the principal home of the Carib negroes. Moreover, this skull has not been measured by any modern methods, or at least Dr. Montané does not give them.

On the contrary, there is at Charleston a veritable Carib skull

[1] Dr. Moultrie, quoted by Morton, "Physical Type of American Indians," in Schoolcraft, "Archives," II.

from Guadeloupe; but, notice well, it is not flattened but, quite the contrary, very high in the crown, a decisive proof against the justice of the classification generally called "deformed Carib."

Finally, there are at Paris several other crania coming from the Lesser Antilles called Carib, which have been measured by modern methods. But, mark well, they are not deformed; that is to say, Dr. Montané does not possess the measurements of a single deformed Carib cranium.

Consequently he undertakes to discover resemblances between this and crania from Ancon, in Peru. He reports the measurement of two types of these the deformed and the non-deformed. The figures published in his work, if they prove anything, demonstrate that the skull in question is not Carib at all but of the non-deformed from Ancon, Peru.

On the contrary the report of M. Graells, Vilanova and Perez Arcas, signed by a large special committee of the Museum of Madrid relates to the two crania discovered by Sr. Ferrer.[1] The authors do not hesitate to recognize the resemblance between the two skulls before them and those generally called deformed Carib. They declare that a complete study of the question of artificial flattening is impossible without a numerous series of the same form. They close by saying that in relation to the two crania before them, they do not believe that there had been deformation but that the shape is natural.

Sr. Felipe Poey, who examined at Havana, about twenty years ago, two crania found by Sr. Ferrer, believed that one of them was perfectly natural. Sr. Rodriquez Ferrer himself did not believe them to be Carib, relying mainly upon the belief that we had never had Caribs in Cuba. Indeed, they never came in their excursions further than Porto Rico, or at least than Santo Domingo, they never flattened the skull, and finally their crania were not of the form which they had been supposed.

In 1512 an abandoned vessel was discovered on the coast of Guanimar, south side of Cuba. No trace of its crew was afterward found. Peter Martyr, from his library in Spain wrote that they were devoured by anthropophagous savages.

On the contrary Las Casas says: "This has not the slightest appearance of truth. No one has been able to prove that the Caribs—if there are any such people—have ever traveled so far from their islands, which are Guadeloupe and Dominica, situated far to the east of San Juan (Porto Rico). I believe that they land at l'Espagnole (Saint Domingo) only now and then. Those who speak like Peter Martyr take their fancies for realities."[2]

The phrase, "if there are any," applied to the Caribs would appear a little strange from the pen of such a great authority.

[1] Report presented at Madrid, March 24, by Srs. Graells, Vilanova and Perez Arcas.

[2] Casas, Historia de las Indias. Madrid, 1875, III, 484.

Casas had no faith in the charge of anthropophagy made against the Indians by the conquerors of the new world, an accusation which he attributed to a desire for a pretext to enslave the savages.

Still more strange is it that neither Casas nor any other of the earlier historians speak of the Indians called Caribs as applying to the heads of their infants apparatus to change the form—an ominous silence when we consider that these same writers are full of detail, false or true, relative to these same savages. In a word, Columbus, Chanca, Americus Vespucius, Bernal Diaz, Peter Martyr, En Ciso, Ferdinand Columbus, Las Casas, Oviedo, Gomara and many others for a century and a half after the discovery are unanimously silent about the artificial deformation of the cranium attributed in later times to the early inhabitants of the Lesser Antilles.

If the first witnesses and chroniclers on America are mute regarding deformation, they describe with great exactness the heads of the indigenes of these islands, and the result is that the skulls are very elevated in the crown.

The most ancient and authoritative of these witnesses, Christopher Columbus,[1] declares that the inhabitants of the Antilles, the Greater and the Lesser, and those of Terra Firma, resemble one another in respect to their natural form, with wide foreheads and heads well elevated.

There were not in the Antilles the two races as alleged, but one uniform race without variation of physical characters. This is so true that when, after ten years of exploration in the archipelago and the northern part of South America, Christopher Columbus arrived at the Island of Guanaja and the countries of Central America, where he found forms of head quite different from those which he had formerly seen, he recorded this fact in his notes.

Americus Vespucius,[2] who saw the same Indians on the islands as well as on the coast, compares their visages with that of the Tartars, who have the forehead very wide.

Doctor Chanca[3] asserts that the only difference among the Indians of these isles consisted in the pretended wearing long hair by the Caribs and the wearing by the women of a kind of cotton bands around the legs above and below the calf.

Bernal Diaz,[4] who never lived in America, but who saw at Seville some hundreds of Indians sent to be sold under the unjust accusation of being eaters of human flesh, many of whom he lodged in his own house, says the Caribs have the same physical conformation as others. "They are not more deformed than others, only they have this evil custom. In all the islands there

[1] F. Colon. Vida del Almirante, cap. 89. Casas. Historia, III, 109, 113.
[2] Premier Navigatum.
[3] Chanca. Lettre au Municipe de Seville, Jan., 1494. Coll. de Navarrete, 1, 353, 358.
[4] Bernal Diaz. Historia de los Reyes Católicos, cap. 118.

is no difference either in the form or the manners of the inhabitants, nor in their language. All have the face and forehead long, the head round, with the same distance between the temples as from the forehead to the occiput."

We may affirm then, in virtue of this testimony, that the primitive Caribs had no habits of deformation, and that their heads, instead of being elongated and flattened as was supposed, were round and elevated.

Oviedo[1] was the first to start the report of the existence of voluntary deformation in America. In his edition of 1535 he says that the inhabitants of St. Domingo had the forehead very wide on account of certain manipulations, "For at the moment of birth they press the forehead and the occiput of children."

Such treatment would not effect a permanent change in the form of the head.[2]

Gomara[3] expresses himself in parallel terms in relation to Saint Domingo, only he specifies that it was the wise women to whom was due the shape of the head in these Indians. He adds, regarding the Indians of Cumaná, that the pressure made at the moment of accouchment was effected by two bundles of cotton. Gomara was never on American soil.

Las Casas[4] says that in Peru it was a great privilege granted to certain chiefs whom they wished to honor to give to the heads of their infants the form of those of the king and princes of the royal family.

From this we conclude that the practice was neither obligatory nor general, nor practiced upon the heads of the royal family. Moreover Casas was never in Peru. On the contrary he knew Saint Domingo better than did Oviedo, but says not one word concerning the heads of the inhabitants of that island. He knew Central America better than did Oviedo, and though he mentions practices attributed to mothers or wise women, deformations of the skull have no place.

It is Cieza de Leon[5] who commences to speak vaguely of wooden apparatus applied to the heads of Indians. He says that among the Chancos, in the province of Quimbaya, and in other regions they compress the heads of new-born babes with tablets which are replaced later on by ligatures.

It is astonishing that with respect to the Caraques, near Manta, by Quito, the operation is reversed, first the bandages and then the tablets, which in his opinion remain four or five years in place. But he knows only indifferently the countries of which

[1] Oviedo. Historia general y Natural de Indias, II, cap. 5; XLII, cap. 3.

[2] Topinard. Elements d'Anthropologie generale. Paris, 756.

[3] Gomara. Historia de las Indias. Madrid, 1852, 172, 206.

[4] Casas. Apologetica Historia, cap. 34, 392.

[5] La Cronica del Perú, cap. 26, 378, 1853. Madrid. Also cap. 50, 404; also cap. 45, 399.

he speaks, as himself avows. As to Peru proper, he mentions the deformative process only among the Collas, saying nothing of Cuzco, Lima and other places in the empire. Moreover this author is one of the most credulous of his time.

Finally, Garcilaso[1] reports that the Indians of Manta, by Quito, deform the heads of their children by means of two tablets which they tighten more and more every day during four or five years. He says that in Tula, or Florida, the same result was attained by means of certain ligatures which they used nine or ten years. But Garcilaso visited neither of these countries. Cabeza de Vaca lived ten years in Florida, describes many customs of the Indians, but makes no mention of deformation. As to Quito, Garcilaso evidently copies Cieza.

It is with relation to Peru proper, where he was born and where he lived up to his twentieth year, that Garcilaso is an authority of the first order. He says not one word of deformation among the Collas nor of any place in the empire of the Incas. It is improbable that he would have omitted an operation so common and one practiced on his own head, if it had existed. Moreover he describes what is done to infants at the moment of birth and during lactation. Instead of the compression of the head, either by the hands, or by bandages, or by tablets, the head is left entirely uncovered and is never touched, particularly near the brain, while the body and arms are securely wrapped.

There are many other narratives of the conquest, but in none of them is there the least confirmation of the statement as to cranial deformation. Human nature is so prone to receive without examination extraordinary statements, that the ball of snow of voluntary deformations in America attained colossal proportions. That which began by being credited concerning three or four regions wide apart, finishes by being extended over the entire continent.

A century and a half after the extinction of the Caribs from the Lesser Antilles, we find other savages in the same islands, in regard to whom the voyagers of their time have repeated all the stories, false or true, that the first Spanish conquerors told concerning various Indian populations.

It has been said that this absurd practice endured long after the conquest, and that it was forbidden by order of the Spanish government, according to others by the decisions of a council of Lima, according to others by a papal decree. The Marquis de Nadaillac affirms that the council in question was held in 1545; but M. Topinard believes that it took place in 1585, and that in 1752 the governor of Lima published a new edict against deformations. Now, there were no councils held in Lima in 1545 and 1585. The five councils held there took place in 1551, 1567,

[1] Garcilaso de la Vega. Comentario reales de los Incas, IX, cap. 8; La Florida del Inca, IV, cap. 15; Comentarios, IV, cap. 12.

1583, 1591 and 1601. The decisions are preserved, and there are not the slightest allusions to deformation.[1]

Rivero and Tschudi[2] visited a large number of Peruvian tombs, examined the mummies in them, among others a fœtus of seven months old, still in the mother's womb, many children of all ages, and of adults, and having observed throughout the same cranial form, without the least vestige of depression nor of deforming apparatus, they came to the conviction that this was the natural form of the head.

M. Robertson[3] examines no less minutely the platicephalic crania of the mound-builders of the United States, supposed to be deformed, and the analysis convinced him that the crania were natural.

We have seen in a former citation that according to Casas the heads of Guatemala Indians deformed in times anterior to the discovery, had given rise by inheritance to crania spontaneously deformed. According to other witnesses the same thing took place among the Omaquas of South America.[4] The practice having been attributed to these savages by Ulloa, an affirmation repeated in 1754 by Unarte, it results that this form of head is at present perfectly natural and that " Children come into the world in this tribe and some others with the head dislocated."

The same result follows concerning the three races of Peru that exist at this moment with the same form of head that they formerly had, without any need of deformatory practices. In the words of Rivero and Tschudi:[5] " But there is one proof still more conclusive against the usage of mechanical means; it is the actual existence of three races, in distinct although contracted areas, where we find no trace of bandage nor of pressure exercised on the head of the new born.

It is then demonstrated there is neither historic, scientific nor rational base for the affirmation that in Tropical America there were countries where the head was modified in form by mechanical means. Nature by its own forces was entirely equal to the task of producing then and producing to-day these same forms in many parts of the world.

This truth is still more evident in relation to the savages, called Caribs, of the Lesser Antilles; first, because none of the earliest chroniclers attribute to them a similar habit, and secondly, because no one has found the form of head that has been attributed to them.—*Juan Ignacio de Armas.*

[1] Leyes de Indias; Solerzano, Politica Indians; Hernaez, Coleccion de Bulas Breves, y ottos Documentos relativos a la Iglesia de America y Filipinàs. Bruxelles, 1879.

[2] Rivero et Tschudi. Antiquida des Peruánas. Vienna, 1851, p. 52.

[3] S. Robertson. Les Mound Builders. Cong. Internat. d'Américanistes. Luxemburg, I, 43.

[4] Sobron. Los idiomas de la America lateria. Madrid, 106.

[5] Rivero and Tschudi, *op cit.*